New Hubble images of doomed star Eta Carinae

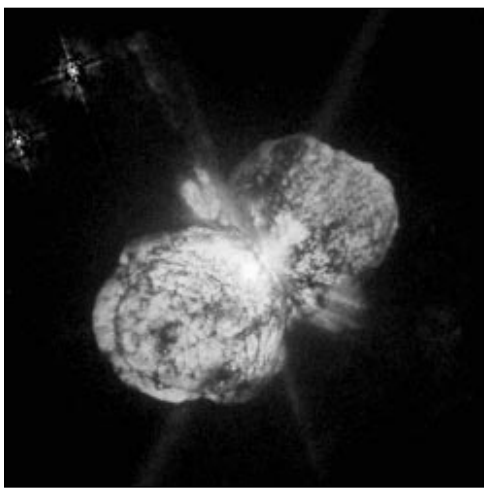
A huge, billowing pair of gas and dust clouds are captured in stunning new Hubble Space Telescope images of one of the most massive stars in the Galaxy, the supermassive Eta Carinae.

Eta Carinae, located more than 8,000 light years away, was the site of a giant outburst about 150 years ago, making it one of the brightest stars in the southern sky. Though the star released as much visible light as a supernova explosion, it survived the outburst. Somehow, the explosion produced two polar lobes and a large thin equatorial disk, all moving outward at about 1.5 million miles per hour. The new observation shows that excess violet light escapes along the equatorial plane between the bipolar lobes. Apparently there is relatively little dusty debris between the lobes down by the star; most of the blue light is able to escape. The lobes, on the other hand, contain large amounts of dust which preferentially absorb blue light, causing the lobes to appear reddish.

Estimated to be 100 times more massive than the Sun, Eta Carinae may be one of the most massive stars in the galaxy. It radiates about five million times more power than the Sun. The star remains one of the great mysteries of stellar astronomy, and the new Hubble images raise further puzzles. Eventually, this star's outburst may provide unique clues to other, more modest stellar bipolar explosions and to hydrodynamic flows from stars in general.

A combination of image processing techniques reveal astonishing detail of the exploding star. Images taken through red and near-ultraviolet filters were subsequently combined to produce a color image. A sequence of eight exposures was necessary to cover the object's huge dynamic range—the outer ejecta blobs are 100,000 times fainter than the brilliant central star.

Individuals with Internet access can view a unique three-dimensional image of the exploding star, which was assembled from two HST images of Eta Carinae taken 17 months apart. Hubble's high resolution of the motion of the gas and dust between the observations allowed astronomers to combine and encode the images to reveal the true three-dimensional geometry of the system. To see the 3-D structure, the image must be viewed through color 3-D glasses with the left eye looking through a red filtered lens, and right eye looking through a blue filtered lens. All the image files—including the 3-D image—may be accessed on Internet at: http://www.stsci.edu/pubinfo/PR/96/23.html



A huge, billowing pair of gas and dust clouds are captured in this Hubble Space Telescope image of the supermassive star Eta Carinae.

Laws change in Texas, but not at JSC

By Natasha Calder

Since the first of this year, thousands of people in Texas have been allowed to carry concealed handguns, but the possession of a firearm or other dangerous weapon at JSC is still prohibited.

"Although there have been no problems regarding this issue to date, JSC Security would like to remind everyone that only authorized federal, state, or local security or law enforcement officials are permitted to carry or display a dangerous or deadly weapon on JSC property in the performance of official duties," said Ken Ramke, chief of the Security Branch. "The penalty for violating this security regulation ranges from written reprimand to removal, even for a first offense."

The concealed weapons statute specifically states that the law does not prevent or limit the employer from prohibiting an individual from carrying a weapon on the premises of the business. JSC's Security Manual limits who may carry weapons on JSC property Ramke said.

"For anyone who wants to report a known or suspected problem with weapons at the center, a phone call to JSC Security at x34441 is all that is necessary," Ramke said. "Security will be glad to investigate and resolve the situation.

JSC Photo by Mark Sowa

EMERGENCY OPERATIONS CENTER—Area community leaders are given a first-hand look at JSC's new Emergency Operations Center. The new state-of-the-art facility provides a central location for community personnel to meet and coordinate efforts to respond to emergencies. The mini mission control also is equipped with computer aided dispatch to aid JSC personnel in an emergency situation. The 4,000 square foot facility in Bldg. 30 also features an emergency response team support area that will help coordinate efforts during an emergency and a weather console that interacts with the NOAA weather system.

JSC employees earn Space Act Awards

Eleven JSC employees were honored last week for their scientific and technical contributions.

Space Act Awards are granted for contributions that are determined to have significant value in the conduct of aeronautical and space activities. The Software Author Award is granted for a software program or technology that has been publicly disseminated.

Individuals who received Space Act Awards were Kevin McCluney of the Mission Operations Directorate for the Configurable Real-Time Analysis System; Brian Anderson of the Mission Operations Directorate for the Operational Data Reduction Complex Upgrade/Rehost; Brett Parrish of the Engineering Directorate for Windows 3.1 Compatible Space Shuttle/TDRSS Communications Software; Carlos Ortiz Longo and Steven Rickman of the Engineering Directorate for Thermal Inactive Mission Evaluation System; Robert Savely, Christopher Culbert, Brian Donnell and Gary Riley of the Information Systems Directorate for Intelligent Physics Tutor; and George Roush of the Information Systems Directorate for COSTMODel, a software management tool.

Frances Mount of the Space and Life Sciences Directorate received the Software Author award for his Posture Video Analysis Tool.

PMA hosts workshops

The Performance Management Association, Houston chapter, will host a workshop series on the "Implementation of an Earned Value Management System" June 27-Oct. 31 at the Ramada Inn on NASA Road 1.

The focus of the five workshops include "Storyboard Development and Work Definition" on June 27; "Cost, Schedule and Resources" on July 25; "Work Authorization and Budget Drivers" on Aug. 29; "Data Accumulation, Analysis and Reporting" on Sept. 26; and "Surveillance and Compliance Reviews" on Oct. 31.

All workshops will be held from 11:15 a.m.-12:45 p.m. and cost $13 each or $60 for all five workshops if purchased in advance and includes lunch. Reservations for the June 27 luncheon are due next Friday. For more information, contact Susan Widmer at x34299.

Space Center Houston hosts balloon exhibit

"Pushing the Envelope: Ballooning to the Edge of Space," is an out-of-this world exhibit now on display at Space Center Houston honoring the explorers who first ventured into the upper stratosphere and became the first to see the Earth from a different view.

Featuring flight suits, helmets, gondolas, capsules, photos, artifacts and more, the exhibit pays tribute to these early space pioneers who, from the 1930s through the early 1960s, ventured to the edge of space in tiny capsules suspended under delicate plastic balloons.

Visitors can explore the invention, mechanics and the sport of modern hot air ballooning. An actual eight-foot-tall balloon travels 55 feet in the air to the ceiling, demonstrating lift and what actually makes a hot air balloon rise.

Also on display is a model of the Manhigh III capsule that, from 1957-58, flew on three separate missions. The Manhigh pilots, reaching heights of up to 200,000 feet, had to undergo rigorous pre-flight training to deal with the physical effects of the lack of oxygen at high altitudes.

Included in the exhibit is a look into the development of high altitude parachuting. Guests can view rare footage of an actual balloon flight by a man who desired to test the effects of gravity—Joseph Kittinger. In 1960, Kittinger set records for a human's highest ascent and longest parachute drop, free-falling from a height of 102,800 feet and reaching speeds of up to 614 miles per hour while passing through temperatures nearly 100 degrees below zero.

Also on display are several gondolas, including Julian Knott's high altitude gondola in which he set a hot air balloon world record altitude of 55,134 feet and the gondola of the Strato-lab IV, one of the first balloon-borne observatories from which scientists were able to study the planet Venus.

An evolution of flight suits and helmets form 1934 to the early 1960s also will be on display, complete with replicas of wicker helmets for guests to try on.

The exhibit will be on display through Sept. 2. Admission to the balloon exhibit is included in a general admission ticket. For more information, contact Space Center Houston at 244-2100.

Juneteenth celebration features top performer

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The second group is the MacArthur High School Jazz Ensemble, under the direction of José Diaz. This group, one of the finest high school jazz ensembles in the country, has garnered such awards as Grand Champion of the Music City Classic Jazz Competition in Nashville, Tenn., and consistent First Division ratings in Texas University Interscholastic League competitions at the regional and state levels. Six times, the group was named "Outstanding Jazz Ensemble" at the Texas State Solo and Ensemble Contest. For more information, contact Pat Burke at x30606.

Crew prepares for Mir mission

(Continued from Page 1)

his time last week training on activities that he will perform during his stay aboard the Russian outpost. Blaha spent time learning the Greenhouse experiment and how to technically evaluate the Microgravity Isolation Monitoring experiment. His training also included the Tissue Equivalent Proportional Counter experiment and microbiological and protein metabolic investigations. Blaha also participated in a four-hour simulation in a Soyuz vehicle mock-up.

STS-79, scheduled to lift-off Aug. 1, will carry a crew of six including Commander Bill Readdy, Pilot Terry Wilcutt, and Mission Specialists Tom Akers, Jay Apt, Carl Walz and Blaha. The fourth U.S./Russian docking mission will drop off Blaha and bring home Lucid after her record stay on the Russian space station. In addition to conducting experiments within a pressurized module, the mission will feature a space walk to transfer several experiments from the shuttle's payload bay to the docking module on the Mir station.

Work to prepare *Atlantis* for its August mission is under way as the crew completed interface verification tests last week. Engineers at Kennedy Space Center are expected to close *Atlantis*' payload bay doors for flight next week and roll the orbiter to the Vehicle Assembly Bldg. On June 24 for mating to its external tank and solid rocket boosters.

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Verteran Thornton leaves JSC

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repair mission. During the 11-day flight, the HST was captured and restored to full capacity through a record five space walks by four astronauts. From Oct. 20 to Nov. 5, 1995, Thornton served aboard *Columbia* on STS-73, as the payload commander of the second United States Microgravity Laboratory mission. The mission focused on materials science, biotechnology, combustion science, the physics of fluids and numerous scientific experiments housed in the pressurized Spacelab module.

Discovery to return to KSC soon

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eight months. Currently, technicians are removing the three main engines and plan to begin work to remove the right hand orbital maneuvering system pod on late this month.

At Palmdale, *Discovery* is nearing the end of a maintenance and modification period and being readied for the trip back to Florida aboard the Shuttle Carrier Aircraft. *Discovery* is currently scheduled to leave California around June 25 for a two-day trip back to KSC, where it will be readied for STS-82, the second Hubble Space Telescope servicing flight planned for a February 1997 launch.

NASA-JSC